

REMARKS

Claims 1-3, 5-13, 15-19 and 21-22 were rejected in the Office Action. Claims 13-15, 20 and 22 have been canceled. Claims 1, 11, 16, 18, and 19 have been currently amended. Claims 23-27 are new. Thus, claims 1-3, 5-12, 16-19, 21 and 23-27 are pending in the present application.

Examiner Interview Summary

Applicants thank the Examiner for taking the time to meet and discuss the present application.

On October 23, 2008, Applicants' counsel Eamonn Gardner of Cooley Godward Kronish LLP, Reg. No. 63,322, met by telephone with Examiner Michael Band. During the interview, the positioning of the power coupler with respect to the bearings in independent claims 1, 13 and 19 was discussed in view of Wurczinger (WO 0308091), equivalent to Wurczinger (USPGPub 2005/0178662).

I. THE DRAWINGS ARE IN COMPLIANCE WITH 37 CFR 1.121(D)

The Office Action objects to the drawings on the grounds that they do not show every feature of the invention specified in the claims. Particularly, the Office Action contends that "a bearing closest to a midpoint between a first end and a second end" is not shown in the drawings. Applicants respectfully disagree.

Applicants have amended claim 19 for clarity without changing the meaning of the claim. The relevant portion of claim 19 now reads: "at least one bearing is a closest bearing to the first end of the rotatable target". Before and after the amendment, at least figure 11 shows the feature

described in the claim. One of the bearings **230** in figure 11 is inherently the closest to the first end of the rotatable target (prior to the amendment, one of the bearings was inherently closest to the midpoint of the target).

In view of figure 11, Applicants respectfully requests that the objections to the drawings be withdrawn.

II. ALL THE CLAIMS MEET THE WRITTEN DESCRIPTION REQUIREMENT UNDER 35 U.S.C. 112

For the rejection of all the claims, the Office Action relies on at least in part, the written description requirement of 35 U.S.C. 112. The Office action says that still pending independent claims 1, 16, and 19 have the limitation “a closest bearing” but the written description does not support this limitation. The limitation “a closest bearing” is described in the specification and the claims are not invalid for lack of a written description.

Claims 1 and 16 all refer to the “at least one bearing” as “a closest bearing... to the first side of the vacuum chamber.” Claim 19 as amended refers to the “at least one bearing” as “a closest bearing... to the first end of the rotatable target.” New claim 23 recites “at least one bearing” as “a closest bearing... to the first end of the rotatable tube.” Support in the specification for “a closest bearing” can be found at least in paragraph [0042]¹ describing figure 10 of the present application, the “[t]he power coupling **210** is located in front of the bearing **230** but behind the seals **232**.” It is inherent in the existence of bearings that one of the bearings **230** described in figure 10 must be closest to the first side of the vacuum chamber. Support can also be found in paragraph [0044] describing figure 11 of the present application, “[w]hen current is introduced into this power coupling **210**, it flows through the rotating tube but not through the

bearings 230...” It is inherent in the existence of the bearings that one of the bearings 230 described in figure 11 must be closest to the first side of the vacuum chamber.

In view of the descriptions and figures included in the present application, Applicants respectfully requests the rejection of these claims be withdrawn.

III. WURCZINGER DOES NOT TEACH OR SUGGEST “THE POWER COUPLER POSITIONED CLOSER, MEASURED ALONG THE AXIS OF THE SHAFT, TO THE ROTATABLE TARGET THAN THE AT LEAST ONE BEARING”

The Office Action rejects currently pending claims 1, 3, 5, 9-10, and 12 under 35 U.S.C. 102(a) as being anticipated by Wurczinger (WO 0308091), equivalent to Wurczinger (USPGPub 2005/0178662). Independent claim 1 has been amended for clarity to recite “the power coupler positioned closer, measured along the axis of the shaft, to the rotatable tube than the at least one bearing” where the at least one bearing is “a closest bearing, measured along an axis of the shaft, to the first side of the vacuum chamber”. As described in claim 1 the power coupling is closer to the rotatable tube than the “at least one bearing”. Since the power coupling must be in front of the “at least one bearing” (which is the closest bearing to the first side of the vacuum chamber) the power coupling must be closer to the rotatable tube than **all** the bearings on the same side of the rotatable tube as the power coupling.

Wurczinger does not teach or suggest such a limitation. The Office Action states that Wurczinger teaches or suggests claim 1 because it discloses “the power coupler with a current limiter positioned between the bearings.” See Office Action ¶ 7. However, according to the claim language of claim 1 the power coupler cannot be positioned **between** the bearings, but must be closer to the rotatable tube than **all** the bearings on the same side of the rotatable tube.

¹ All paragraph references are to the Patent Application Publication US 2005/0224343.

Similarly, in new claim 23 the at least one bearing must be closer to the rotatable tube than **all** the bearings on the same side of the rotatable tube.

Wurczinger does not teach each and every limitation of independent claims 1 and 23. Applicants respectfully submit that independent claim 1 is valid and allowable. Claims 2-3, 5-12, 21 and 24-27 are thus allowable at least by virtue of their depending from an allowable independent claim.

IV. NEITHER WURCZINGER, TOKI, NOR THE COMBINATION OF WURCZINGER AND TOKI TEACHES OR SUGGESTS HOW TO POSITION THE LIQUID-METAL CONNECTOR AS RECITED IN CLAIMS 11, 16, 18, AND 19.

The Office Action rejects claim 19 under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. 01305523 (“Toki”). Claim 19 has been amended for clarity, but the meaning has not changed. Toki does not teach or suggest each limitation in claim 19. First, Toki does not teach the limitation of the **position** of the liquid-metal electrical connector. Claim 19 requires that the “liquid-metal electrical connector is positioned between the at least one bearing and the first end of the rotatable target”. The “at least one bearing” is the closest bearing to the first end of the rotatable target and the liquid-metal connector is between that bearing and the target. Therefore, the liquid-metal connector is closer to the rotatable target than **all** the bearings on the same side. Toki has no such requirement and accordingly, does not teach or suggest claim 19.

Second, Applicants respectfully disagree that Toki’s use of mercury is the same as Applicants’ liquid-metal connector. Applicants amended claims 11, 16, 18, and 19 to better characterize the use of the liquid-metal connector as described in [0037] of the present application. Applicants’ liquid-metal connector “use[s] liquid metal, such as mercury, bonded to

the contacts to form the electrical connection.” This is different than Toki’s bearing case 2 in which the liquid metal is pooled rather than bonded. Applicants also disputes that liquid-metal is not capable of being bonded. *See* Office Action ¶ 20. Applicants points to the example connector cited in paragraph [0037] manufactured by Mercotac located in Carlsbad, California.² Toki does not teach every limitation disclosed in claim 19. Applicant respectfully submits that claim 19 is thus allowable.

The Office Action rejects claims 11, 16, and 18 under U.S.C. 103(a) as being unpatentable over Wurczinger in further view of Toki. As previously noted, Applicants respectfully traverse the rejection because Wurczinger and Toki do not teach or suggest a **position** for the power coupler, or a liquid metal connector, which is closer to the vacuum chamber than the closest bearing on the same side as required by the claims. Claim 11 depends on claim 1 which requires the location of the power coupler to be “closer... to the rotatable tube than the at least one bearing”. As noted above, Wurczinger does not teach this limitation. While Toki does discuss using electrically conductive liquid, it does not teach anything regarding the position of a liquid-metal connector, nor is the electrically conductive liquid taught in Toki bonded.

Claim 18 depends on independent claim 16. Claim 16 requires the liquid-metal connector to be “positioned between the at least one bearing and the rotatable tube” and again the “at least one bearing” is the closest bearing to the first side of the vacuum chamber. Therefore, the liquid metal connector must be closer to the rotatable tube than **all** the bearings on the same side of the tube. Independent claim 16 successfully traverses this rejection because neither Wurczinger nor Toki teach this positioning of the liquid-metal connector. Applicants

² *See* www.mercotac.com

respectfully submit that independent claim 16 is valid and allowable. Claims 11 and 16 are thus allowable because Wurczinger in view of Toki does not disclose every element of the claims. Claim 18 is allowable at least by virtue of depending on allowable independent claim 16.

V. NEITHER WURCZINGER, TANAKA, NOR THE COMBINATION OF WURCZINGER AND TANAKA, TEACH, SUGGEST OR RENDER OBVIOUS THE USE OF A BEARING COMPRISING MP35N.

The Office Action rejects claim 8 under 35 U.S.C. 103(a) as being anticipated by UK Patent Application No. 2,290,305 ("Tanaka"). Claim 8 is allowable at least by virtue of depending on an allowable independent claim. Tanaka does disclose using a cobalt alloy, but it is not the same as the alloy disclosed in claim 8. Claim 8 discloses using a cobalt alloy Mp35N which contains between 29.14% to 36.64% cobalt. The alloy described in Tanaka contains on between 2% and 22% cobalt. Amounts of other elements in the alloys also differ. Because the composition of the alloys differs, Applicants respectfully submit that claim 8 is allowable.

VI. NEITHER WURCZINGER, TOKI, BARRETT NOR ANY COMBINATION OF WURCZINGER, TOKI AND BARRETT TEACHES OR SUGGESTS THE LIMITATIONS AS RECITED IN CLAIMS 2, 6, 15, OR 17.

Claims 2, 6, and 17 are all allowable at least by virtue of their depending on an allowable independent claim. The Office Action rejects claims 2, and 6 under 35 U.S.C. 103(a) as being anticipated by Wurczinger in view of US Patent No. 6,736,948 (Barrett).

With respect to claim 2, Applicants respectfully disagree that it would be obvious to one of ordinary skill modify Wurczinger to incorporate the limitations disclosed in Barrett. Barrett does not disclose placing a power coupling located within the vacuum chamber; Barrett discloses moving the entire support, rotational mechanism, cooling system and power supply within the

vacuum chamber. Barrett col. 5:36-46 and 10:43-11:15. It would not be obvious to one of ordinary skill to incorporate all the features disclosed in Barrett into Wurczinger, nor would it be equivalent to moving only the power coupler into the vacuum chamber as described in the current application. Accordingly, Applicants respectfully submit that claims 2, 6, and 17 are allowable.

VII. NEITHER WURCZINGER, NEEDHAM, NOR A COMBINATION OF WURCZINGER AND BARRETT TEACHES OR SUGGESTS THAT A BEARING COMPRISES CERAMIC NEEDLES.

The Office Actions rejects claim 7 under 35 U.S.C. 103(a) as being anticipated by Wurczinger in view of US Patent No. 4,115,283 (Needham). Claim 7 is allowable at least by virtue of depending on an allowable independent claim. Additionally, Needham fails to disclose “ceramic needles” as disclosed claim 7. Needham discloses making “bearings comprise[d]... of... ceramic fibers...” This is very different from a bearing comprising ceramic needles. “Needles” as used in claim 7 does not refer to a bearing comprised in part of ceramic fibers, but rather an entirely ceramic bearing that is referred to as a “needle” and is shaped like a cylinder to allow rotation in only two directions. Accordingly, Applicants submit that claim 7 is allowable.

CONCLUSION

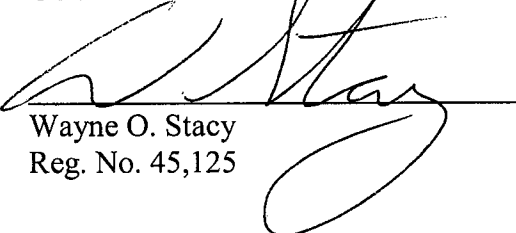
In view of the foregoing, Applicants respectfully submits that no further impediments exist to the allowance of this application and, therefore, requests an indication of allowability. However, the Examiner is requested to call the undersigned if any questions or comments arise.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

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